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SOV/180-59-6-4/31

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AUTHORS: Bochvar, A.A., Novikov, I.I., and Kholmianskiy, V.A.
(Moscow)

TITLE: Dimensional Changes in Flat Specimens of Alloys of the
Cu-Ni System due to Cyclic Temperature Fluctuations

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh
nauk, Metallurgiya, 1 toplivo, 1959, Nr 6, pp 21-23 (USSR)

ABSTRACT: It has been shown (Ref 1) that specimens of metals,
characterized by cubic crystal lattice and, consequently,
being isotropic in respect of the thermal expansion, may
nevertheless undergo an irreversible change of their
dimensions when subjected to cyclic thermal treatment;
the magnitude of these changes, which are an accumulative
effect of plastic deformation due to thermal stresses,
should depend on the ratio between the magnitude of these
stresses and the yield point of the alloy; since the
mechanical properties and those physical characteristics
upon which depends the magnitude of thermal stresses,
change with the composition of the alloy, it follows that,
all other factors being equal, the thermally induced
dimensional changes of alloys of a given system should be
a function of the composition of these alloys, and the

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Dimensional Changes in Flat Specimens of Alloys of the Cu-Ni System
due to Cyclic Temperature Fluctuations

object of the present investigation was to study this relationship in the alloys of the Cu-Ni system. The experimental specimens, in the form of flat strips measuring 100 x 20 x 3 mm, were cut from cold-rolled sheet. One heat treatment cycle consisted in holding the specimen at the test temperature for 7 min and water quenching. The length of the specimens was measured (with accuracy of 0.1 mm) after 25, 50, and 75 cycles. The results of the first series of experiments, in which all specimens were quenched from 750 °C, are reproduced in Fig 1, where the increase in length of the specimen ($\Delta l, \%$) is plotted against the number, n , of the heat-treating cycles for the Ni, 25% Cu-Ni, 50% Cu-Ni, 75% Cu-Ni, and Cu specimens (curves 1-5, respectively). It will be seen that in each case Δl increased linearly with n . The results of the next series of experiments are plotted in Fig 2, where Δl (after 75 cycles) is plotted against the composition of the alloy for specimens quenched from 750 °C (curve 1) and from a temperature 180 °C higher than the recrystallization

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**Dimensional Changes in Flat Specimens of Alloys of the Cu-Ni System
due to Cyclic Temperature Fluctuations**

temperature of the alloy of a given composition (curve 2); graph a in Fig 2 shows the constitution diagram of the Cu-Ni system; graph 6 shows the composition dependence of the recrystallization temperature ($^{\circ}\text{C}$); the curve shown in graph 4 illustrates the concentration dependence of σ/k , calculated from the Timoshenko formula $\sigma = k E \alpha / \lambda (1 - \mu)$, where σ is thermal stress in the elastic deformation zone, α is the linear coefficient of thermal expansion, E is Young's modulus, λ is heat conductivity, μ is Poisson ratio, k is proportionality coefficient. Finally, graph 2 shows the concentration dependence of hardness (kg/mm^2) of the Cu-Ni alloys. Analysis of the obtained results, considered in conjunction with the data illustrated in Figs 2a, 6, 4, 2, led the authors to the conclusion that the effect of the composition of a solid solution on the magnitude of the thermally induced, permanent dimensional changes, can be qualitatively interpreted in terms of the concentration dependence of the physical and mechanical properties of the alloys.

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Dimensional Changes in Flat Specimens of Alloys of the Cu-Ni System
due to Cyclic Temperature Fluctuations

There are 2 figures and 3 Soviet references. 4/

SUBMITTED: June 29, 1959

Card 4/4

KHOL'NAVA, Ya.A.

Mercury γ -calorimeter. Izv. AN SSSR. Ser. fiz. 25 no.2:257-260
F '61. (MIRA 14:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii
im. D. I. Mendeleeva.
(Calorimeters)

KHOL'NIKOVA, M.I.

PEREL'DIK, D.L.; KHOL'NIKOVA, M.I.

Streptomycin therapy for tuberculosis of the skin. Vest. ven. i
derm. no.1:44 Ja-F '55. (MLRA 8:4)

1. Iz Dnepropetrovskogo oblastnogo kozhno-venerologicheskogo dispen-
sara.

(STREPTOMYCIN) (SKIN--TUBERCULOSIS)

~~KHOL'NIKOVA, M. I.~~

Organization of gonorrhea control following treatment. Vest.ven.
i derm. 30 no.2:33-35 Mr-Apr '56. (MLRA 9:7)

1. Iz Dnepropetrovskogo oblastnogo kozhno-venerologicheskogo
dispansera
(GONORRHEA, prev. & control
control organiz. after ther.)

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Crystal γ -spectrometer. Yu. V. Klad'nov. *Uspehi*
Fiz. Nauk 41, 350-89 (1950).—Cited in review; 11 references.

KHOL'NOV, Y. V.

Author: Dzhalepov, B. S. , Zhukovskii, M.N. and Khol'nov, Y.V.

Title: γ radiation of Ag^{110} .

Journal: Doklady Akademii Nauk SSSR, 1951, Vol.77, No.4, p. 597

Subject: Physica

From: D.S.I.R., Oct. 1951

KHOL'NOV, Yu.

USSR/Physics - Gamma Radiation

11 Sep 52

"Gamma Radiation of Sb^{124} ," K. Gromov, B. Dzhelepov, N. Zhukovskiy,
A. Silant'yev, Yu. Khol'nov

"Dok Ak Nauk SSSR" Vol 86, No 2, pp 255-258

By means of the gamma spectrometer that employs the Compton electron, the authors investigate gamma radiation of subject antimony isotope, under conditions similar to those of the investigation of gamma spectra of Co^{60} and Ag^{110} in 1951 by the authors. The source of gamma rays was activated metallic antimony in the amt of 0.7 gram. Discuss exptl curve of current strength in an electromagnet versus number of coincidences per unit of time. Submitted by Acad P. I. Lukirskiy 2 Jul 52.

235T98

Khol'nov, Yu. V.

U S S R .

✓ γ -Radiation of Iron-59. B. S. Dzhelepov, N. N. Zhukovskii, and Yu. V. Khol'nov. *Doklady Akad. Nauk S.S.S.R.* 86, 497-498 (1952). *Sovetsk. Akad. Nauk*, 56A, 733 (1953).—Exptl. curves of the γ -radiations of Fe^{59} , as detd. with a γ -ray spectrometer, are shown. The γ -spectrum consists of 2 lines of 1.101 ± 0.011 and 1.278 ± 0.013 m.e.v. energy and $1.39 \pm 0.05:1$ relative intensity. K. L. C.

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Jul/Aug 53

KHOLNOV, YU. V.

USSR/Nuclear Physics - Cu, Gamma Emission

"Gamma Emission of Cu64," B. S. Dzhelepov, N. N. Zhukovskiy, V. P. Prikhodtseva and Yu. V. Kholnov, Radio Inst, Acad Sci USSR

Iz Ak Nauk, Ser Viz, Vol 17, No 4, pp 511-517

Studied in the gamma-spectrum of Cu64 the line $h = 1.34$ MeV, also observed by F. Kurie and M. Ter-Pogossian (Phys Rev 75, 677 (1948)). Worked with gamma spectrometer, using recoil electrons. Obtained the same results as previously (DAN 86, 497 (1952)).

Indebted to A. V. Kudryavtseva, L. N. Zyryanova and V. Chumina.

Rec 9 Jul 53.

1. Radiyevyy institut Akademii nauk SSSR.

272 T51

KHOL'NOV, YU. V.

USSR/Physics - Instruments

Card 1/ Pub. 43 - 5/5

Authors : Dzhelepov, B. S.; Zhukovskiy, N. N.; and Khol'nov, Yu. V.

Title : Ritron - gamma-spectrometer utilizing output electrons

Periodical : Izv. AN SSSR. Ser. fiz. 18/5, 599 - 624, Sep - Oct 1954

Abstract : The Ritron-magnetic gamma-spectrometer described in this report can be used for the study of gamma-spectra of radioactive substances with energies of from 300 - 4000 kev. With respect to resolving power the instrument was found to be inferior to the gamma-spectrometer with improved focus "Elotron", however, it has a certain advantage over the former, namely, it utilizes only uniform magnetic fields which makes it possible to calculate the form of the spectral line, spectral sensitivity, luminosity and other properties of the instrument. Some results obtained by the application of the Ritron-spectrometer are listed. Twenty-seven references; 15 USSR; 1 Canadian; 1 English; 1 Dutch and 9 USA (1927 - 1954). Tables; diagrams; drawings.

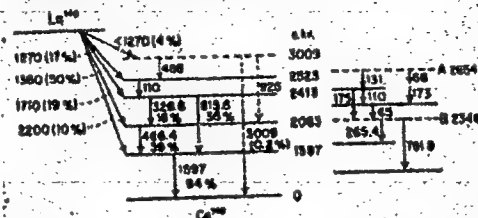
Institution: Academy of Sciences USSR, Radium Institute
Submitted: October 4, 1954

MURIN, Andrey Nikolayevich, professor; KHOL'NOV, Yu.V., redaktor; KHLAROV,
L.A., redaktor; IVANOVA, A.V., tekhnicheskij redaktor

[Introduction to radioactivity] Vvedenie v radioaktivnost'.
[Leningrad] Izd-vo Leningradskogo univ., 1955. 250 p. (MIRA 9:3)
(Radioactivity)

Khol'nov, Yu. V.

γ -Radiation and decay scheme of lanthanum-140. *Yu. V. Arkhangel'skiy, B. S. Dzhelezov, N. N. Zhukovskiy, V. P. Prishchepova, and Yu. V. Khol'nov. Invest. Akad. Nauk S.S.S.R., Ser. Fiz., 19:261-10 (1966).* The γ -ray spectrum of La_2O_3 irradiated by neutrons was investigated with a ritron γ -spectrometer (cf. C.A. 49, 5143c). The energy and the relative intensities are 335 (0.19), 483 (0.41), 822 (0.37), 918 (0.12), 1597 (1.00), 2534 (0.068), >2700 e.kv. (<0.003). The half-life of decay is 40 hrs. From all data a decay scheme is derived.



The conversion coeffs. and the abs. intensities of γ -transitions are calcd. The properties and the decay of the radioactive isobars Kc^{140} , Cs^{140} , Ba^{140} , Pr^{140} and Nd^{140} are discussed. A diagram is drawn on a unitary energetic scale of the levels and transitions in these atoms. The particularly dense packing of Ce^{140} is attributed to the presence of a completed 82 neutron shell (magic no.). *S. Fekete*

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Khol'nov, Yu. V.

Spectrum of Iodine-127. M. P. Glazunov, B. S.
Dzhelepov, and Yu. V. Khol'nov. *Bull. Acad. Sci. U.S.S.R.*
Phys. Ser. 19, 255 (1956). Engl. translation. See
C.A. 50, 1487a. R.M.R.

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KHOL'NOV

Yu. V.

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✓ 467

GAMMA RADIATION FROM Au¹⁹⁸. B. S. Dzhelepov, N. N.

Zbukovski, V. P. Prikhodiasova and Yu. V. Khol'nov.

(Kholov Radium Inst.). Invest. Akad. Nauk S.S.S.R.-Ger.

Fiz. 19, 271-8(1956) May-June. (In Russian)

Investigation concerning γ radiation of Au¹⁹⁸ based on two new γ lines of 676 and 1088 Ke and associated β - γ and γ - γ coincidences. Systematic and detailed description of the Au¹⁹⁸ decay scheme is given. 31 references. (R.V.J.)

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KHOL'NOV, YU. V.

6939

AN ELECTRON RECOIL STUDY OF THE GAMMA SPECTRA
OF ^{114}Sb , ^{115}Fe , ^{115}Ag , ^{64}Cu , ^{162}Ir , ^{161}La , AND ^{197}Au . R. S.

Dzhelapov and Yu. V. Hol'nov (Academy of Sciences of the
U.S.S.R., Moscow). Nuovo cimento (10) 3, Suppl. 1, 49-53
(1956). (In English)

An apparatus "riton" used to investigate γ -ray spectra
is described. Energy calibrations were made with γ rays of
accurately known energies and the spectral sensitivity was
checked with the Na^{22} lines. The spectra of the radioactive

substances were investigated and compared with those ob-
tained in earlier experiments. (F.S.)

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KHOL'NOV, Yu. V.

DZHELEPOV, B.S.; PRIKHODTSOVA, V.P.; FRONTISTOV, A.I.; KHOL'NOV, Yu. V.

Gamma radiation of ^{65}Zn , Izv. AN SSSR Ser. fiz. 20 no. 12: 1359-1360
D '56. (MLRA 10:3)

1. Radiyevyy institut im. V.G. Khlopina AN SSSR.
(Zinc--Isotopes) (Gamma rays)

KHOL'NOV, Yu.V.

DZHELEPOV, B.S.; PRIKHODTSEVA, V.P.; FROKTISTOV, A.I.; KHOL'NOV, Yu.V.

Gamma-ray spectra of As⁷⁶. Izv.ZN SSSR.Ser.fiz. 20 no.12:1361-1364
D '56. (MLRA 10:3)

1. Radiyevyy institut im. V.G.Khlopina AN SSSR.
(Arsenic--Isotopes) (Gamma rays--Spectra)

Khol'nov, Yu. V.

120-3-40/40

AUTHORS: Fisarevskiy, A.N. and Khol'nov, Yu. V.

TITLE: The Technique of Nuclear Spectroscopy at the Seventh All-Union Conference on Nuclear Spectroscopy (Tekhnika yadernoy spektroskopii na VII vsesoyuznaya soveshchaniya po yadernoy spektroskopii)

PERIODICAL: Priroda i Tekhnika Eksperimenta, 1957, Nr 3, pp.118-120 (USSR)

ABSTRACT: Brief accounts are given of the various instruments described at the 7th All-Union Conference on Nuclear Spectroscopy which took place on 25-31 January 1957 in Leningrad.

1. α -spectroscopy. Relatively few α -spectrometers were reported. Among them were those due to A. P. Komar and S. A. Bochagov of the Leningrad Physico-Technical Institute and S. A. Baranov and A. G. Zelenkov of the Institute of Atomic Energy of the Academy of Sciences of the USSR. Both of these are ionisation chambers with grids. A magnetic α -spectrometer was reported by I. I. Agapkin and L. L. Gol'din.

2. β -spectroscopy. A considerable number of β -spectrometers

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17C-5-40/40

The Technique of Nuclear Spectroscopy at the 7th All-Union Conference on Nuclear Spectroscopy.

has been reported with half-widths ranging from about 0.02% to 0.5%.

2. γ -spectroscopy. Among these were magnetic γ -spectrometers using recoil electrons, interference spectrometers using bent crystals, and scintillation spectrometers used in conjunction with photomultipliers. A complaint is made about the scarcity of large crystals. A report on the production of photomultipliers was given by L. G. Leyteyzen. The conference unanimously agreed that the absence of mass-produced photomultipliers with reliable characteristics makes it very difficult to develop instruments for the detection of nuclear radiations. The same applies to large spectrometric crystals. There are no figures or references.

ASSOCIATION: Radium Institute imeni V. G. Khlopin of the Academy of Sciences of the USSR (Radiyevyy institut im. V. G. Khlopina AN SSSR)

SUBMITTED: April 9, 1957.

AVAILABLE: Library of Congress.

Card 2/2

1. Nuclear spectroscopy-Conference 2.  Spectrometers 3. Crystals

Khol'nov, Yu. V.

48-7-11/21

AUTHORS: Golovanov, I.B., Dzhelepov, B.S., Lebedev, L.S., Prikhodtseva, V.P., Khol'nov, Yu.V.

TITLE: The γ -Spectrum of In^{114*} (γ -spektr In^{114*})

PERIODICAL: Izvestiya Akad. Nauk SSSR, Ser. Fiz., 1957, Vol. 21, Nr 7, pp. 985 - 986 (USSR)

ABSTRACT: The relative intensities of the γ -rays of the 49 days In^{114*} were determined by means of a "ritron" under new test conditions. The figure shows the distribution of the emission electrons according to H_0 (after drawing off the background). The peak values corresponding to the 4 γ -lines of In^{114*} 191, 556, 772 and 1300 keV are distinctly to be seen. It has to be noted that in the study of the γ -spectrum of In^{114*} for the first time, by means of the "ritron", a γ -line - 191 keV so soft for this apparatus was investigated. In this domain of energy we did not possess any point on the curve of the spectral sensitivity. In order to obtain this point, the authors used the preparation of In^{114*} . The course of the investigation is fully described and explained. The separation of the spectrum was carried out by means of the standard individual lines. The re-

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KHOL'NOV, YU.V.

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ACHIEVEMENTS IN NUCLEAR SPECTROSCOPY. Yu. V.

Khol'nov. Vostok Akad. Nauk S.S.S.R. 27, No. 5, 105-7

(1957; May. (In Russian))

Developments in theoretical and experimental nuclear spectroscopy were discussed during the conferences of the Academy of Science, Physico-Mathematical Dept., in Leningrad, Jan. 23-31, 1957. (R.V.J.)

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DZHELEPOV, Boris Sergeyevich; PEKER, Leon Kaufmanovich; KHOL'NOV, Yu.V.,
otv.red.; PEVZNER, R.S., tekhn.red.

[Decay schemes of radioactive nuclei] Skhemy raspada radioaktivnykh
iader. Moskva, Izd-vo Akad. nauk SSSR, 1958. 784 p. (MIRA 11:12)
(Nuclei, Atomic--Decay)

AUTHOR: Khol'nov, Yu. V., Candidate of Physical and Mathematical Sciences 30-58-4-21/44

TITLE: New Works in the Field of Nuclear Spectroscopy
(Novyye raboty v oblasti yadernoy spektroskopii)
All-Union Conference (Vsesoyuznoye soveshchaniye)

PERIODICAL: Vestnik Akademii Nauk SSSR, 1958, . . . Nr 4,
pp. 102-103 (USSR)

ABSTRACT: The Department for Physical and Mathematical Sciences arranged the 8th All-Union conference on nuclear spectroscopy in Leningrad from January 27 till February 3. More than 700 Soviet specialists as well as guests from China, Bulgaria, the DDR, Poland, Roumania, Czechoslovakia, France and Yugoslavia took part in it. The main topic was the problem of the structure of atomic nuclei, one of the most important problems of physics. The works were carried out by means of the home-produced precision spectrometers in the course of the last years. New model representations of the nucleus were developed. In this field works were carried out devoted to the decay scheme of neutron-deficient

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New Works in the Field of Nuclear Spectroscopy
All Union Conference

30-58-4-21/44

isotopes of rare earths. These isotopes are produced as result of reactions in the synchro-cyclotron at the United Institute for Nuclear Research and then are investigated in spectroscopic laboratories. The spectra of conversion electrons, positrons, γ -rays of neutron-deficient isotopes of lutetium, thulium, erbium and others have already been investigated. Besides the works carried out by means of scintillation spectrometers also works by means of a double magnetic lens spectrometer were reported. By this method the isotopes Tb^{155} , Lu^{173} , Eu^{174} and others were investigated. The obtained results make it possible to draw some conclusions as to the rules governing the arrangement of the nuclear levels. A number of works were devoted to the investigation of the decay schemes of La^{140} , As^{74} , Se^{75} , Mo^{99} , Cs^{134} , Au^{199} , Dy^{161} and others. The reports on the α -decay problem also show success in this field, a general theory of decay for all nuclei has, however, not yet been developed. Several reports touch the problem of

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New Works in the Field of Nuclear Spectroscopy
All-Union Conference

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the interaction type in the β -decay. One meeting was devoted to the γ -radiation, the conversion, as well as to the nuclear isomerism; here a further development of the theory of internal conversion could be found. Very important experiments on the Coulomb nuclear excitation are being carried on. It was regretted that the quality of the domestic crystals and photomultipliers do not satisfy demands.

1. Neutron spectroscopy—USSR

Card 3/3

KHOL'NOV, Yu. V.

PRINHOOTSEVA, V.P.; KHOL'NOV, Yu. V.

Gamma spectrum of La^{140} . Izv. AN SSSR. Ser. fiz. 22 no. 2:176-178
F '58. (MIRA 11:4)

1. Radiyevyy institut im. W.G. Khlopina AN SSSR.
(Lanthanum—Isotopes) (Gamma rays)

KHCL'NOV, Y. V.

507/48-22-7-15/26

Original: Ye. Ye. P. Zabolotov, B. S. Zolotarev, A. V. Shubin, V. Ya. Krikhoshina, V. P. Khol'nov, Yu. V. Shubin, G. Ye.

Radiation from As^{74} (Isotopicheskiye As^{74})

Investiya Akademii nauk SSSR, Seriya fizicheskaya, 1990, Vol. 22, Nr 7, pp. 831-838 (USSR)

ABSTRACT: In December 1977 the authors obtained a radiochemically pure preparation of As^{74} with a β -decay specific activity. The characteristic features of the β -decay were examined and precisely determined. The first induced by a bombardment of germanium with As^{74} with an energy of 10.0 MeV. The results of the investigation of β - and γ -spectra are exposed. It is shown that the ground state of As^{74} is of an 2^{-} -type. After the "typical" β - γ spectra had been subtracted the β -spectrum for the soft components of both spectra proved to be rectilinear. In the background of the β -spectrum the K- and L α conversion-lines of the transition of 596 and 655 keV are clearly marked. The K-655 line is, without doubt, a transition of the type $2^{-} \rightarrow 0^{+}$. With the β -596 keV transition which is connected with the positron branch, diagrams are more complicated, as the proportion of the K-captures must be known in order to be able to determine q_{β} . Two methods of the determination of q_{β} are given. The spectra of the β -radiation of As^{74} was investigated by means of the recoil electrons. The relative intensity of three γ -lines was investigated with an equipment of a better resolution. The annihilation line, at β -566- and the 655 keV line. With the help of an equipment of a lower resolution, but of a luminous intensity amplified by the hundredfold, it was attempted to find harder γ -lines in the radiation of As^{74} . The decay energy in the transition from As^{74} to Ge^{74} gives rise to the assumption that the level of Ge^{74} are excited by about 2500 keV. The level of Ge^{74} is the central one of 1200 keV background connected with the softer lines above the violet background connected with the softer lines was observed. The intensity of this line is smaller by a factor of 320 than that of the annihilation line. It is shown that in Ge^{74} the second level of excitation probably has an energy of 1200 keV. If this is true, it should be expected that a transition from the second level to the first one of

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Radiation from As^{74}
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about 600 keV exists and that this level forms a doublet with the 596 keV level. The transition in the decay scheme of As^{74} to the excited level of Ge^{74} is characterized by a conversion of the transition at As^{74} - 596.5 keV of Ge^{74} it is shown that in this transition the ratio is $q_{\beta} = 2.6 \pm 2.1$. In the investigation of the ratio K/β in the As^{74} decay to the level at 596.5 keV of Ge^{74} it is shown that the ratio K/β for this transition is normal. The level at 1200 keV of Ge^{74} is probably a second vibration level with the characteristic 2⁻. The second excited level of Se^{74} is probably near 1300 keV and is of the type 2⁻.
B. M. Isayev, I. P. Solov'ev, Ye. Ye. Baroni, Ye. M. Eshpov and their team collaborated in the work. There are 5 figures, 3 tables, and 15 references, 8 of which are Soviet.

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21(7)

SOV/20-121-6-11/45

AUTHORS:

Dzhelepov, B. S., Corresponding Member, Academy of Sciences, USSR, Prikhodtseva, V. P., Khol'nov, Yu. V.

TITLE:

The $0^+ \rightarrow 0^+$ -Transition in Ce^{140} ($0^+ \rightarrow 0^+$ -perekhod v Ce^{140})

PERIODICAL:

Doklady Akademii nauk SSSR, 1958, Vol 121, Nr 6, pp 995-997 (USSR)

ABSTRACT:

By some authors the following problem was raised: Do the conversion electrons K-1909 (~ 1909 keV) correspond to the transition between the excited state (1909 keV, quantum characteristics 0^+) and the ground state (also 0^+)? In order to solve this problem, the authors carefully investigated the γ -spectrum of La^{140} in the energy region of ~ 1900 keV. Lanthanum oxide irradiated by thermal neutrons was used as a source. The original activity of the preparation was 2,8 Cu. The results of the measurements are given in a diagram. No γ -line is observed in the energy region 1800-2000 keV. The intensity of the γ -rays ~ 1900 keV (if they exist at all) is less than $4 \cdot 10^{-4}$ quanta per disintegration. These data (together with the data of two previous papers (Refs 1, 2)

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The $0^+ \rightarrow 0^+$ -Transition in Ce^{140}

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concerning the intensity of the conversion line 1909 keV enable us to conclude that there is a $0^+ \rightarrow 0^+$ -transition. In order to confirm the existence of the line K-1909, and for a more accurate determination of its intensity, the authors investigated the hard part of the spectrum of the conversion electrons of La^{140} by means of 2 spectrometers of the ketron type. These spectrometers were placed at the authors' disposal by A. A. Bashilov, Leningradskiy universitet (Leningrad University) and K. Ya. Gromov, Radiyevyy institut AN SSSR (Radium Institute AS USSR). La^{140} was used as a source in both of these cases. According to the results given in a diagram, the existence of the lines K- and L-1909 is beyond any doubt. The transition has the average energy 1902 keV, and the ratio of the intensities K_{1902}/K_{1596} is equal to 0,220, (i.e. the average value of all the measurement series). For the lower limit of the conversion coefficient of the transition 1902 keV the value $\alpha_{K-1902} > 0,38$ was found.

This leads to the conclusion that the transition with the energy 1902 keV in Ce^{140} is the hitherto unknown transition $0^+ \rightarrow 0^+$. Besides, the authors sought and found the K- and L-conversion lines which correspond to the γ -lines 2343 and

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The $0^+ \rightarrow 0^+$ -Transition in Ce^{140}

SOV/20-121-6-11/45

2390 keV and to the γ -line 2515 keV. A table gives the experimental and the theoretical conversion coefficients on the K-shell for the transitions discussed in this paper. The authors thank A. A. Bashilov and K. Ya. Gromov (who made it possible to carry out the control experiments by means of their spectrometers), N. D. Novosil'tseva for the chemical separation of La^{140} from a barium solution, and also A. G. Dmitriyev and Yu. A. Gur'yan for their help in carrying out measurements. There are 3 figures, 1 table, and 6 references, 5 of which are Soviet.

ASSOCIATION: Radiyevyy institut im. V. G. Khlopina Akademii nauk SSSR
(Radium Institute imeni V. G. Khlopin, AS USSR)

SUBMITTED: June 30, 1958

Card 3/3

DZHELEPOV, B.S.; KHOL'NOV, Yu.V., kand.fiz.-mat.nauk, otv.red.;
SEMENOVA, Ye.A., red.izd-va; SMIRNOVA, A.V., tekhn.red.

[Isobaric nuclei with a mass number of $A=74$] Izobarnye
iadra s massovym chislom $A=74$. Moskva, Izd-vo Akad.nauk
SSSR, 1959. 39 p. (Svoistva atomnykh iader, no.1). (MIRA 12:11)

1959, (Isobars, Nuclear)

DZHELEPOV, B. S., KHOLNOV, Yu. V., PRIKHODYSEVA, V.P.

" $A \ 0^+ \rightarrow 0^+$ Transition in Ce^{140} .", Nuclear Physics, vol. 9, 4, 1959, pp.665-669
(No. Holland Publ. Co., Amsterdam)

Radium Inst, im V.G. Khlopin, Acad. Sci, USSR, Leningrad.

A search has been made for gamma-quanta of energy ≈ 1900 keV in the spectrum of La^{140} by means of a gamma-spectrometer by analysis of recoil electrons. It is shown that such exist, their intensity is $< 0.4 \times 10^{-3}$ quantum per disintegration. It is simultaneously confirmed that the spectrum of conversion electrons contains intense conversion lines corresponding to a transition energy of 1902 keV.

The lower limit of the conversion coefficient of this transition proved equal to 0.38. Such a large value of this limit indicated that it is either a transition of high multipole order ($\lambda > 10$), or a $0^+ \rightarrow 0^+$ transition in which gamma quanta of the given energy are entirely absent. The first assumption may be discarded since in this case the lifetime of the 1900 keV state should be very great ($> 10^{10}$ years), whereas the intensity of the corresponding conversion line falls off with a halflife of ≈ 40 hours. We are thus dealing here with a new $0^+ \rightarrow 0^+$ transition.

The paper also discusses the characteristics of several other transitions in Ce^{140}

21(7)

AUTHORS: Dzhelepov, B. S., Prikhodtseva, V. P., Khol'nov, Yu. V. SOV/48-23-2-7/20

TITLE: γ -Spectrum of J^{131} (γ -Spektr J^{131})

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 2, p 206 (USSR)

ABSTRACT: The authors investigated the γ -spectrum of J^{131} within the range of 200-800 kev, determined the intensities of well known γ -lines and the γ -line with 514 kev, of which mention is made in paper (Ref 2). The results of these investigations are contained in a figure. For the intensities of γ -lines the following values were obtained:

E_{γ} kev:	278	362	514	633.5	722
I_{γ} % :	5.7	100	< 0.4	8.9	1.9

In addition, a special investigation has shown that the intensity of the γ -line with 514 kev never exceeds 0.4% of the intensity of the γ -line with 362 kev. The authors thank V. A. Yelisseyev for help in the measurements. There are 11 figures and 2 references, 1 of which is Soviet.

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γ -Spectrum of J¹³¹

SOV/48-23-2-7/20

ASSOCIATION: Radiyevyy institut im. V. G. Khlopina Akademii nauk SSSR
(Radium Institute imeni V. G. Khlopin of the Academy of
Sciences, USSR)

Card 2/2

21(7)

SOV/48-23-2-8/20

AUTHORS: Dzhelepov, B. S., Yeliseyev, V. A., Prikhodtseva, V. P.,
Khol'nov, Yu. V.

TITLE: γ -Radiation of Br⁸² (γ -Izlucheniye Br⁸²)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959,
Vol 23, Nr 2, pp 207-210 (USSR)

ABSTRACT: The γ -spectrum was studied by means of the "Rytron" spectrometer. It is given in figure 1. 10 lines were detected. The energies and relative intensities obtained in this and another paper are listed in a table for comparison. The best accordance resulted from reference 8, both for energies and intensities. Within the range 1700-2000 keV a weak line at 1780 keV and only one elevation of a point above the background at 1910 keV were found. Within the range 2000-2700 keV no lines with an intensity above 0.2% were found. The conversion coefficient of the main transitions in Br⁸² was determined by means of the intensities obtained. The initial value of α_K for the transition type E2 of transition 777 keV in Kr⁸² was adopted from tables published by Sliv and Band (Ref 13) with an amount of $8.22 \cdot 10^{-4}$. A decay scheme of Br⁸² \rightarrow Kr⁸² is given in figure 2. The transition types of the individual transitions

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γ -Radiation of Br^{82}

SOV/48-23-2-8/20

of Kr^{82} were determined according to a comparison of the theoretical α_K values with the experimental ones (Table 2).

The lines 1648 and 1780 kev detected for the first time as levels are not given in the decay scheme. There are 2 figures, 2 tables, and 13 references, 3 of which are Soviet.

ASSOCIATION: Radiyevyy institut im. V. G. Khlopina Akademii nauk SSSR
(Radium Institute imeni V. G. Khlopin of the Academy of Sciences, USSR)

Card 2/2

24(5),24(7)

AUTHORS:

Dzhelepov, B. S., Prikhodtseva, V. P., SOV/48-23-7-7/31
Khol'nov, Yu. V.

TITLE:

The γ -Emission of Cs^{134} (γ -izlucheniye Cs^{134})

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959,
Vol 23, Nr 7, pp 826-827 (USSR)

ABSTRACT:

The object of the measurements carried out by a magnetic spectrometer was the determination of the relative intensity of the γ -lines. The measurement results are shown in two diagrams, the half-width of the lines in the range of 1 Mev is indicated with 3.3 %, and the intensities of the lines are compared. The half-width of the lines could be reduced by a better focusing to 1.6 %. The results of this investigation, the energy and the relative intensity of the γ -lines of Cs^{134} are finally compiled. The authors thank V.-A. Yeliseyev and A. Ushakov for the execution of the measurements, and N. N. Zhukovskiy for making possible the measurements by the elotron. There are 1 figure, 1 table, and 11 references, 4 of which are Soviet.

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The γ -Emission of Cs¹³⁴

SOV/48-23-7-7/31

ASSOCIATION: Radiyevyy institut imeni V. G. Khlopina Akademii nauk SSSR
(Radium Institute imeni V. G. Khlopin of the Academy of
Sciences, USSR)

Card 2/2

DZHELPOV, B.S.; DRANITSYNA, G.F.; KHOL'NOV, Yu.V., kand.fiz.mat.nauk,
ovt.red.; SEMENOVA, Ye.A., red.isd-va; ZAMARAYEVA, R.A., tekhn.
red.

[Systematics of β -disintegration energies] Sistematika energii
 β -raspada. Moskva, Izd-vo Akad.nauk SSSR, 1960. 60 p.
(Svoistva atomnykh iader, no.3) (MIRA 13:7)
(Beta rays--Decay)

DZHELEPOV, B.S.; ZHUKOVSKIY, N.N.; KHOL'NOV, Yu.V., kand.fiz.-mat.nauk;
ovt.red.; KAL', M.M., red.izd-va; ZAMARAYEVA, R.A., tekhn.red.

[Isobaric nuclei with an atomic number of 110] Isobarnye iadra
s massovym chislom $A=110$. Moskva, Izd-vo Akad.nauk SSSR, 1960.
72 p. (Svoistva atomnykh iader, no.4). (MIRA 13:11)
(Isobars, Nuclear)

DZHELEPOV, B.S.; PRIKHODTSEVA, V.P.; KHOL'NOV, Yu.V.; BARKOVSKIY, I.V.,
red.izd-va; BOCHEVER, V.T., tekhn.red.

[Isobaric nuclei with a mass number of 140] Izobarnye iadra s
massovym chislom $A=140$. Moskva, Izd-vo Akad. nauk SSSR, 1960.
97 p. (Svoistva atomnykh iader, no. 5.) (MIRA 14:2)
(Isobars, Nuclear)

80639

S/048/60/024/03/08/019

B006/B014

24.6720

24.6810

AUTHORS:

Dzhelelov, B. S., Khol'nov, Yu. V.

TITLE:

The Gamma Spectrum of ¹⁵²Eu, ¹⁵⁴Eu in the Energy Range
245 ± 500 and 1,450 ± 2,000 kev

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960,
Vol. 24, No. 3, pp. 300 - 303

TEXT: The article under review was read at the Tenth All-Union Conference on Nuclear Spectroscopy (Moscow, January 19 - 27, 1960). The authors studied the γ -spectrum by means of a magnetic γ -spectrometer (rytron). A mixture of ¹⁵²Eu and ¹⁵⁴Eu, whose total activity amounted to about 800 millicuries, served as source. The activity ratio between ¹⁵⁴Eu and ¹⁵²Eu was estimated as being 0.21±0.03. The results obtained are reproduced in two diagrams and a table. The following lines were detected (the first figure denotes the respective energy of the line, while the following figure in parentheses denotes the relative intensity referred to the 344-kev line): 245 kev (35 ± 4); it consists of two lines which were

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The Gamma Spectrum of $\text{Eu}^{152,154}$ in the Energy Range 245 \pm 500 and 1,450 \pm 2,000 kev S/048/60/024/03/08/019
B006/B014

inseparable in these investigations: 244.7 kev (Eu^{152}) and 248 kev (Eu^{154}). B. V. Bobykin and K. M. Novik showed that the intensity ratio of these two lines equals 21.1 : 5.9. Hence, the Eu^{152} line yields the largest fraction. 344 kev (100). 440 kev (detected by N. N. Zhukovskiy). It corresponds to the conversion lines 411.23 and 444.23 (Ref. 6). The authors of this article recorded 415 ± 4 kev (10.1 ± 2) and 450 ± 4 (11.4 ± 2). The intensity sums of these two lines are in good agreement with that calculated by Zhukovskiy for the 440-kev line. 496 ± 10 kev (2.6 ± 1): This line was observed by the authors for the first time. It corresponds to a transition between the levels 1,577 and 1,088 kev (489-kev transition) or between 1,533 and 1,050 kev (483-kev transition) of Eu^{152} . Also $1,526 \pm 15$ kev (1.2 ± 0.3) was observed for the first time. It may be assumed that it results from a direct transition from the 1,533-kev level (2^-) to the ground level (0^+). 1,600 kev (described in Ref. 7). $1,610 \pm 7$ kev (1.6 ± 0.2): no further details available on this line. Besides the spectrum of recoil electrons, Fig. 2 also contains the decay schemes for Eu^{152} and Eu^{154} as published by Zhukovskiy. No lines with relative intensities > 0.1 could be found in the range 1,670 - 2,000 kev. Finally,

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The Gamma Spectrum of $\text{Eu}^{152,154}$ in the S/048/60/024/03/08/019
Energy Range $245 \div 500$ and $1,450 \div 2,000$ kev B006/B014

the authors thank A. Ushakova and V. Rumyantsev for their assistance rendered in measurements. There are 2 figures, 1 table, and 7 references, 4 of which are Soviet.

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4

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10641

S/048/60/024/03/10/019
B006/B014

24.6720

AUTHORS:

Dzhelepov, B. S., Romyantsev, V. L., Khol'nov, Yu. V.
Shchukin, G. Ye.

TITLE:

The Gamma Spectrum of ^{187}W

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960,
Vol. 24, No. 3, pp. 311-312

TEXT: The article under review was read at the Tenth All-Union Conference on Nuclear Spectroscopy (Moscow, January 19 - 27, 1960). The authors studied the γ -emission of ^{187}W by means of a magnetic γ -spectrometer (rytron); three series of measurements were made with a source of about 1,000 millicuries. The total spectrum of recoil electrons is illustrated. The measured energies and the relative intensities referred to the intensity of the 488-kev line are compiled in a table. The following lines (in kev) - the respective intensities are given in parentheses - were detected: 488 (100), 558 (22.5 ± 1.7), 622 (31.2 ± 2.5), 691 (119 ± 7), 778 (22.2 ± 1.5), 864 ± 9 (1.4 ± 0.3), 891 ± 9 (1.1 ± 0.3). ✓

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The Gamma Spectrum of W^{187}

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B006/B014

These results are compared with those obtained by Mueller et al. and Dubey et al. No γ -lines with intensities >0.3 per cent of that of the 488-kev line could be observed in the range $950 \pm 1,350$ kev. There are 1 table and 6 references, 1 of which is Soviet.

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Sciences, USSR)

Card 2/2

S/048/60/024/007/022/032/XX
B019/B056

24.6720
AUTHORS:

Voinova, N. A., Dzhelepov, B. S., Zhukovskiy, N. N., and
Khol'nov, Yu. V.

TITLE:

The γ -Emission of Tb^{160} /9

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960,
Vol. 24, No. 7, pp. 852-857

TEXT: This paper was read at the 10th All-Union Conference on Nuclear Spectroscopy, which took place from January 19 to January 27, 1960 at Moscow. The γ -emission of Tb^{160} was investigated by means of two γ -spectrometers, which evaluate the recoil electrons of the rytron and the elotron; their source was 0.146 g terbium oxide with an activity of roughly 800 millicuries. By means of the rytron, the spectrum was investigated according to the photoelectrons within the energy range from 80 to 300 kev; as a converter, a bismuth target was used. From 200 to 1700 kev the spectrum was investigated according to the recoil electrons under conditions that are normal for a rytron and an elotron. In Fig. 1 the photoelectron spectrum, obtained by means of the rytron, in Fig. 2 the recoil electron spectrum, obtained by means of the elotron.

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The γ -Emission of Tb¹⁶⁰S/048/60/024/007/022/032/XX
B019/B056

spectrum, obtained by means of the elotron, and in Fig. 3 the recoil electron spectrum, obtained by means of the rytron is shown. In the Table, the energies and the relative intensities of the lines obtained by the authors are given. In the first column of the Table, the lines are numbered, in the second, the energies are given in kev, and in the third column the relative intensities (elotron, recoil electron), in the fourth column the relative intensities (rytron, recoil electron), and in the fifth column the relative intensities (rytron, photoelectron) are given. In the further columns, values obtained by Ye. Grigor'ev et al. (Ref. 4), Bäckström (Ref. 3), Jaffé (Ref. 6), Thiry (Ref. 7), Nathan (Ref. 8), Clark and Knowles (Ref. 9), Ofer (Ref. 10), and Clark (Ref. 11) are given. All lines measured are in the decay scheme of Tb¹⁶⁰ shown in Fig. 4. There are 4 figures, 1 table, and 11 references: 3 Soviet, 4 US, 2 British, 1 Canadian, and 1 Swedish.

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89251

S/048/61/025/001/017/031
B029/B060

26.2246

AUTHORS: Dzhelepov, B. S., Khol'nov, Yu. V.

TITLE: Photorhytron

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25,
no. 1, 1961, 98-105

TEXT: A study has been made of the applicability of the rhytron in the range of smaller energies. The rhytron dealt with here is a magnetic gamma spectrometer of the Radiyevy institut (Radium Institute). In the spectra of a great number of isotopes there are, in fact, many gamma lines in the very range of low energies. The main problem discussed is the determination of such conditions as are required if the photoeffect shall be used with any advantage. While a large cross section of the photoeffect augments the spectral sensitivity, there are several factors acting against this. The device used, which the authors had earlier worked out (Ref. 1), is illustrated in Fig. 1. A 50 μ thick cellophane cover was mostly used as a target when working with recoil electrons. Lead and

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Photorhytron

bismuth targets served for the experiments with photoelectrons. The spectrum of the photoelectrons ejected by gamma rays with $h\nu = 122, 244,$ and 345 kev was examined with three targets: $Pb(13.5 \text{ mg cm}^{-2})$, $Bi(7.5 \text{ mg cm}^{-2})$, and $Bi(3.7 \text{ mg cm}^{-2})$. Figs. 2, 3, 4 illustrate the respective results. The three lines L_{122} , K_{244} , and K_{345} are clearly visible. Figs. 3 and 4 show the relative half-width of the lines on the peak height (above the "Compton" tail) as a function of the thickness of the target. The authors selected a thickness of the bismuth target at which the efficiencies of the rhytron working with photoelectrons and Compton electrons are about the same in the ~ 350 -kev energy range. The following section of the present article deals with the form of spectral lines. Fig. 5 shows the spectra of electrons ejected by gamma rays with the energies $100(Sm^{153})$, $145(Ce^{141})$, $190(In^{114})$, $280(Hg^{203})$, $411(Au^{198})$, and $660 \text{ kev}(Cs^{137})$. Fig. 6 shows the dependence of the relative half-width of K and L lines and, for a comparison, the same curve for the Compton lines. The considerable improvement of resolution in the case of the photorhytron is evident. Fig. 7 shows the dependence of the K/L ratio upon the energy of the gamma quanta. The following two sections deal with

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Photorhytron

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B029/B060

the energy calibration of the spectrometer and the more difficult intensity calibration. The energy of gamma quanta can be determined within an accuracy of ~ 0.5 . The application of the device under new experimental conditions is illustrated in Fig. 10 by the example of the spectrum taken thereby of photoelectrons ejected by the gamma rays of Tb. The use of photoelectrons in the rhytron made it possible to (1) extend the working range of this gamma spectrometer considerably, namely, up to a ~ 60 -kev energy of gamma rays; (2) highly improve the resolution of the device at low energies; (3) improve the ratio height of photopeaks/Compton background as compared with other spectrometers making use of photoelectrons. Ye. A. Kholnova and the students A. Ushakova, V. Rumyantsev, Ye. Vinogradova, as well as E. Arutyunyan and G. Shchukin are thanked for their help in the measurements. The article under consideration is the reproduction of a lecture delivered at the 10th All-Union Conference on Nuclear Spectroscopy which took place in Moscow from January 19 to 27, 1969. There are 10 figures and 3 Soviet-bloc references.

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Radium Inst. N.G. Khlopov AS USSR

S/048/61/025/002/007/016
B117/B212

AUTHORS: Voinova, N. A., Dzhelepov, B. S., Khol'nov, Yu. V.
TITLE: Gamma radiation of Ta¹⁸²
PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25,
no. 2, 1961, 233-236

TEXT: The present paper was read at the 11th Annual Conference on Nuclear Spectroscopy (Riga, January 25 to February 2, 1961). The authors have investigated the gamma spectrum of Ta¹⁸² in a wide energy range by using a "ritron" and "photoritron". The source was a 2.8 g tantalum foil activated by neutrons. Its activity amounted to about 2 curies. Fig. 1 shows the photoelectron spectrum of a bismuth target that had been bombarded with gamma rays of Ta¹⁸², recorded by means of the photoritron. The relative intensities of soft gamma rays are given in the last column of the table; they have been determined from the relative intensity of the photopeaks. The correction for the absorption of gamma rays have been made in the source and in the input slit. Besides, also the sensitivity of the instrument was

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Gamma radiation of Ta¹⁸²

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considered on these corrections. Composite lines are separated into singular components with the help of standard lines. The results obtained agree well with data given in Refs. 3 and 5, but differ very much from those given in Refs. 4 and 6. The hard region of the spectrum was investigated by means of a ritron. After the corrections had been introduced, the intensities of the hard lines were determined (Table). The resolution of the ritron, however, was not high enough to separate the gamma lines, as was done in Refs. 1 and 2. Therefore, the intensities of the hard lines determined with standard lines are not as accurately given as those in Refs. 1 and 2. Special attention had been paid to investigate the spectral region around 1,600 kev. It was found that in this region the number of coincidences does hardly exceed the background. The results of the study showed that if 1608.5-kev gamma quanta exist, their maximum intensity amounts to 0.05% of the 1121.6-kev line intensity. There are 3 figures, 1 table, and 10 references: 5 Soviet-bloc.

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Gamma radiation of Ta¹⁸²

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Legend to the table:

- 1) transition energy, kev;
- 2) relative intensities according to Müller, Murray, Bachström, O. Sumbayev, Fröman & Ryde, N. A. Voinova, V. D. Vitman and own measurements (last column).

Энергия перехода, kev	Относительные интенсивности							
	Мюллер и др. [3] (1952)	Мюллер и др. [4] (1955)	Бенкстрём [7] (1956)	Оуэбас [5] (1957)	Фрёман и Райде [6] (1957)	Войнова и др. [1] (1959)	Витман и др. [2] (1961)	Наша данные
85,71	2,8	7,5	—	—	—	—	—	—
87,74	28,4	85	—	—	130	—	—	—
84,87	1,7	5	—	—	(7)	—	—	—
100,09	13,1	40	—	—	52	—	—	15±7
113,88	2,8	7,5	—	—	(8)	—	—	—
116,40	0,4	1,7	—	—	—	—	—	—

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Gamma radiation of Ta¹⁸²

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152,41	12,5	35	—	18,2	39 (29)	—	—	18±4
158,37	4,0	11,5	—	7,2	(10)	—	—	3±1
179,38	5,4	18	—	8,7	(12)	—	—	—
198,31	2,8	7,5	—	4,5	(8)	—	—	—
222,05	12,8	35	—	21,4	(25)	—	—	10±3
229,27	6,8	20	—	9,8	(14)	—	—	8±1
264,09	7,7	22	—	9,1	12	—	—	—
892,4	—	—	—	—	—	<1,4	<0,5	—
927	—	—	—	—	—	3±2	—	—
980	—	—	—	—	—	2,5±1,5	—	—
1003	—	—	—	—	—	9±3	5±2	—
1046	—	—	—	—	—	—	0,9±0,9	—
							0,6	—
1121,6	100	100	100	100	100	100	100	100
1155	—	6,5	—	7,1	—	<4	3,6±1,0	—
1189,4	44,8	45	—	56,8	~21	45±8	44±3	43
1220,0	95	95	145	101	112,5 (75)	84±8	80±6	105±8
1231	—	50	—	—	(37,5)	35±10	25±5	—
1254	—	—	4	—	—	6±2	4±1	—
1275	—	—	3	—	—	3±2	—	—
1290	—	—	2	—	—	5±2	—	—
1331	—	—	—	—	—	<0,6	—	—
1375(+1388)	—	—	<0,3	—	—	<1,4	—	—
1437	—	—	<0,3	—	—	<0,05	—	—
1454	—	—	<0,3	—	—	—	—	—
1608,5	—	—	—	—	—	—	—	—

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DZHELEPOV, Boris Sergeyevich; PEKER, Leon Kaufmanovich; SEREYEV, Viktor Olegovich; KHOL'NOV, Yu.V., otv. red.; BARKO /SKIY, I.V., red.izd-va; SMIRNOVA, A.V., tekhn.red.

[Decay schemes of radioactive nuclei at $A \geq 100$] Skhemy raspada radioaktivnykh iader $A \geq 100$. Moskva, Izd-vo AN SSSR, 1963. 1958.p.

(MIRA 16:11)

(Radioactive substances--Decay)

S/048/63/027/002/003/023
B104/B180

AUTHORS: Arutyunyan, E. A., Khol'nov, Yu. V., and Shchukin, G. Ye.

TITLE: The possibility of using a toroidal sector magnetic field in γ -spectrometry

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 27, no. 2, 1963, 177-181

TEXT: A paired spectrometer with axial symmetry (Fig. 1) is suggested for gamma-ray spectrometry. A toroidal field of the $H = H_0/r$ type is suggested as solid angles of up to 19% of 4π can be used with it in β -spectrometry. The electrons may be focused in sequence in the two symmetrically arranged toroidal sector spectrometers. The method was checked with the spectrometer of the Radium Institute AS USSR. Both toroidal spectrometers have six gaps arranged symmetrically with respect to the axis S-1-2. The investigations were conducted with a Zn^{65} γ -source and only one gap. Results show that the aperture ratio is.

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The possibility of using ...

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more than 2.34 times that of the "ritron" (with uniform magnetic field). (B. S. Dzhelepov et al., Izv. AN SSSR. Ser. fiz., 18, 599, 1954; 20, 1361, 1956) If all gaps were be used the aperture ratio would be 14 times greater. The first drawback to the method is that the electron trajectories are not exactly known, so the target could not be accurately adjusted. The second is the high background (up to 30%). The first could be eliminated by using an additional magnetic field near the source for collimating the γ -beam, and the second by using an iron free spectrometer. There are 2 figures.

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Fig. 1. Diagram of the apparatus.

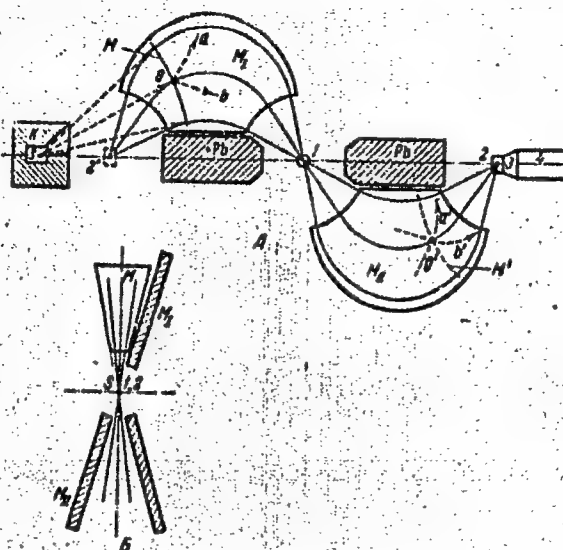
Legend: (A) Horizontal; (B) Vertical; (K) Collimator; (S) Source;
(M) Target; (M_I) First magnet; (M_{II}) Second magnet; (1) Geiger counter;
(2) Scintillation counter; (3) Light pipe; (3) Photomultiplier;
(5) (M') Target picture.

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Fig. 1



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ACCESSION NR: AP5021732

UR/0386/65/002/002/0079/0083

AUTHOR: Fedyanin, O. I.; Khol'nov, Yu. V. 21.44.55

TITLE: Effect of toroidal drift on the injection of plasma across a magnetic field 76 61 B

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 2, no. 2, 1965, 79-83

TOPIC TAGS: plasma physics, plasma magnetic field, MHD flow

ABSTRACT: Experiments were conducted for studying the motion of a plasma in a toroidal magnetic field. A toroidal stainless steel vacuum chamber was used (major diameter 120 cm, minor diameter 10 cm). This chamber was placed in the magnetic system of a sectionalized solenoid which generates a quasistationary field (maximum field strength ~ 3000 oe, half-cycle $\sim 2 \cdot 10^{-3}$ sec). Two spark sources were used for plasma injection located in the plane of the torus at one azimuth ($\phi = 0$). The injectors give different directions for the initial velocity of the plasma stream: for the inside injector, \vec{v}_{pi} is parallel to ∇H^2 ; for the outside injector, \vec{v}_{po} is antiparallel to ∇H^2 . The plasma flux in this trap was measured by screened electric probes at $\phi = 45$ and 135° . It was found that the flow of the plasma injected from

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L 01292-66

ACCESSION NR: AP5021732

15

the outside source at 45° azimuth has a bell-shaped distribution with a maximum shifted toward the outside. When the plasma is injected from the inside source, the number of particles which pass the 45° azimuth is considerably less than for the outside source, and the distribution corresponds to the ordinary distribution of a plasma in a toroidal magnetic field due to toroidal drift. With continued motion in the toroidal field, the plasma "drifts" to the outside wall of the chamber. This is probably due to the effect of the conductive boundary of the chamber. Graphs are given for the particle distribution. "In conclusion, the authors consider it their pleasant duty to thank M. S. Rabinovich and I. S. Shpigel' for useful consultation, and N. V. Perov and V. M. Zykov for assistance in preparing and conducting the experiments." Orig. art. has: 3 figures.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute, Academy of Sciences SSSR)

SUBMITTED: 27May65

4455
ENCL: 00

SUB CODE: ME

NO REF SOV: 003

OTHER: 001

90
Card 2/2

ARUTYUNYAN, E.A.; DZHELEPOV, B.S.; KHOL'NOV, Yu.V.; SHCHUKIN, G.Ye.

Gamma-ray spectrum of Sb^{122} . Izv. AN SSSR. Ser. fiz. 29 no.7;1107-1111
Jl '65. (MIRA 18:7)

ARUTYUNYAN, E.A.; DZHELEPOV, B.S.; KHOI'NOV, Yu.V.

Spectrum of gamma rays from Ce^{143} . Izv. AN SSSR. Ser. fiz. 29 no.7:
1127-1130 J1 '65. (MIRA 18:7)

L 25762-66 -EWT(m)/EWP(t) DIAAP/IJP(c) JD

ACC NR: AP6016392

SOURCE CODE: UR/0048/65/029/007/1107/1111

AUTHOR: Arutyunyan, E. A.; Dzhelepov, B. S.; Khol'nov, Yu. V.; Shchukin, G. Ye. ³⁵
B

ORG: none

TITLE: Spectrum of Sb sup 122 gamma-rays 19

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 7, 1965, 1107-1111

TOPIC TAGS: gamma ray, antimony, gamma spectrum, gamma spectrometer, tin, tellurium

ABSTRACT: In this article are presented an experiment and results from it for the investigation of the γ -ray spectrum of Sb^{122} using the electron output and a magnetic γ -spectrometer for taking the measurements. The energies and intensities of the γ -rays are compared with those obtained by other methods. The data for the first four basic γ -transitions agree with preceding work. The new transitions are compared favorably with Sn^{122} and Te^{122} but with admission of the necessity of further study. It is also noted that the intensities of the β -components at the 1340 and 1095 kev levels may not be taken as accurate. The authors thank V. F. Rodionov and T. I. Sidorova for their assistance with the measurements, and also N. N. Zhukovskiy and A. G. Maloyan for providing instruments for the investigation of a segment of the gamma-ray spectrum of Sb^{122} . Orig. art. has: 3 figures and 1 table. [JPRS]

SUB CODE: 20 / SUBM DATE: none / ORIG REF: 002 / OTH REF: 004

Card 1/1 CC

L 25760-66 EWT(m) DIAAP JD/JG

ACC NR: AP6016394

SOURCE CODE: UR/0048/65/029/007/1127/1130

AUTHOR: Arutyunyan, E. A.; Dzhelepov, B. S.; Khol'nov, Yu. V.

ORG: none

TITLE: ¹⁹Gamma-ray spectrum of ¹⁴³Ce sup 143

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 7, 1965, 1127-1130

TOPIC TAGS: cerium, gamma spectrum, gamma spectrometer, sodium, lanthium, radioisotope

ABSTRACT: This article is a presentation of the exact data from an experiment reviewed in brief in an earlier publication. The γ -spectrum of Ce^{143} was investigated using a γ -spectrometer. Five series of measurements were taken with sources having an activity on the order of 1 curie. In the experiment a number of new γ -transitions were detected: 443, 535, 590, 793, 1000, and 1295 kev. All the new transitions, with the exception of 443 and 793 kev, require the introduction of additional levels. It was also noted that during the experiment isotopes Na^{24} and La^{140} were detected, measured throughout the energy range, and excluded from the Ce^{143} spectrum. The authors thank G. Ye. Shchukin, T. I. Sidorova and V. F. Rodionov for their assistance with the measurements. Orig. art. has: 2 figures and 1 table. [JPRS]

SUB CODE: 20, 18 / SUBM DATE: none / ORIG REF: 003 / OTH REF: 003

Card 1/1 CC

L 09229-67 EWT(m)/ENP(t)/ETI IJP(o) JD/JG

ACC NR: A27002792

SOURCE CODE: UR/0048/66/030/008/1253/1259

AUTHOR: Agutyunyan, E. A.; Vrzal, Ya.; Dzholepov, B. S.; Liptak, Ya.; Urbanets, Ya.; Khol'nov, Yu. V.

ORG: none

TITLE: Gamma ray spectrum of Co sup 143

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 8, 1966, 1253-1259

TOPIC TAGS: gamma radiation, gamma spectrum, radioactive decay, radiolotope, cesium

ABSTRACT: The γ -radiation of Co^{143} was investigated with the aid of a $Co(Li)$ -spectrometer. Detector characteristics: depth of sensitive layer 6 mm; working volume, 5 cm³; half-width of the γ -lines of Co^{60} , 4 kev. The source was prepared by the (n, γ) reaction of a specimen of Co^{142} enriched to 89.7%. The γ -spectrum was measured over the energy range of up to 2000 kev with the aid of 512- and 2048-channel pulse analyzers, the average exposure time being three hours. The values obtained for the energies and relative intensities of the γ -rays of Co^{143} are tabulated. Twenty-six γ -lines were obtained. The finds are generally in agreement with the findings of other investigators. Major difference in intensities are observed for the transitions with energies of 372, 587, 795, (triple line), and 936 kev, however. The transitions E = 322, 500, 556, 804, 1000, 1029, 1044, 1058, 1325 kev do not fit in the scheme of Pr^{143} proposed by Copinathan et al. (Phys.

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L 09229-67

ACC NR: A7002792

2

Rev., 136, 1247 (1964)) (measurements with scintillation spectrometers). The scheme of the decay of Co^{143} will be discussed later. "The authors are indebted to L. N. Moskvina for chemical purification of the preparation and to T. I. Sidorova for assistance in analyzing the findings." Orig. art. has: 4 figures and 1 table. [JPRS: 39,040]

SUB CODE: 20,18 / SUMMARY DATE: none / ORIG REF: 002 / OTH REF: 002

2/2

L 09236-67 ENT(m)/ENT(t)/ETI IJP(c) JD/JG
ACC NO: AP7002793

SOURCE CODE: UR/0043/66/030/008/1260/1264

AUTHOR: Arutyunyan, E. A.; Vitzal, Ya.; Dzholopov, D. S.; Liptak, Ya.; Urbanets, Ya.; Khol'nov, Yu. V.

ORG: none.

TITLE: Gamma ray spectrum of Nd sup 147

SOURCE: AN SSSR. Izvestiya, Seriya fizicheskaya, v. 30, no. 8, 1966, 1260-1264

TOPIC TAGS: gamma spectrum, pulse analyzer, gamma spectrometer

ABSTRACT: The γ -ray spectrum of Nd^{147} was investigated with the aid of a $Ge(Li)$ -detector built in the Prague Institute of Solid-State Physics. The spectrum was recorded by means of 2048- and 512-channel pulse analyzers. The Nd^{147} source was obtained from enriched Nd^{146} with the aid of the reaction $Nd^{146}(n,\gamma)Nd^{147}$. Four series of measurements with an average exposure time of 3 hr were carried out. Findings: The intensities of all γ -lines decrease in time with a period equal to the half-life of Nd^{147} . The recorded intensities and energies of the γ -rays of Nd^{147} were tabulated and compared with the E_{γ} and I_{γ} obtained by means of a magnetic γ -spectrometer, a scintillation spectrometer, and a β -spectrometer of the $\pi/2$ type. Peaks corresponding to ther-transitions at 542, 590, 610, 622 kev could be plotted for the first time. The presence of 310-kev γ -rays corresponding to the transition 720 \rightarrow 410 kev, which was observed by Gunye et al. (Sov. Phys. Rev., 124,

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0925 1678

L 09236-67

ACC NR: A27002793

172 (1961)), could not be confirmed (the intensity of the corresponding quanta was below 0.2 of the intensity of the transition $E\gamma = 531$ kev). "The authors are indebted to L. N. Moskvina for chemical purification of the preparation (Na¹⁴⁷ source/ and to T. I. Sidorova for assistance in analysing the findings." Orig. art. has: 3 figures and 1 table. (JPRS: 39,040)

SUB CODE: 20 / SUBM DATE: none / ORIG REF: 001 / OTH REF: 002

KHIL'NOVA, V. I.

137-58-1-1841

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p 250 (USSR)

AUTHORS: Fridlyander, I.N., Khol'nova, V.I.

TITLE: A Method of Obtaining Special Electrical Properties in Aluminum Alloys by a Continuous Casting of Thin Sheet Blanks (Metod polucheniya osobykh elektricheskikh svoystv alyuminiyevykh splavov putem nepreryvnoy otlivki tonkoy listovoy zagotovki)

PERIODICAL: V sb.: Metallurg. osnovy lit'ya legkikh splavov. Moscow, Oborongiz, 1957, 394-399

ABSTRACT: An installation has been developed for continuous production of 6-12 mm strip from an alloy of Al containing 3-3.5 Mn. The metal is extruded through a narrow aperture in the furnace onto a moving screen cooled by water from beneath. Quenching from the liquid state occurs, as a result of which a solid solution of Mn and Al, oversaturated from the liquid phase, is formed. The casting temperature varies within the 800-840° interval, and undesirable primary inclusions of intermetallic compounds appear when the temperature is lowered. Subsequent cold rolling to a thickness of 0.5 mm did not cause decomposition of the solid solution. The resultant sheet had a σ_b of 33-37 kg/mm² and

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137-58-1-1841

A Method of Obtaining Special Electrical Properties in Aluminum Alloys (cont.)

δ = 2-3 percent. Measurement of the electrical properties showed that in 0-200° interval, the temperature dependence of resistivity α is low and virtually invariable (app. 0.9×10^{-3} ohm/1 C), and the resistivity is 0.110 ohm/mm²/m. Heating to 300° and higher results in a reduction in resistivity and an increase in its temperature dependence.

P.N.

1. Aluminum alloys--Electrical properties--Processes

Card 2/2

ACCESSION NR: AT4037653

S/2981/64/000/003/0120/0135

AUTHOR: Tulyankin, F. V.; Khol'nov, V. I.; Golovinov, M. F.; Uzenov, Ye. K.; Komkov, P. F.; Zinov'yev, V. K.; Ayupova, Ye. O.; Andreyev, A. D.

TITLE: Effect of technological factors on the structure and properties of forgings from alloy V93

SOURCE: Alyuminiyevy*ye splavy*, no. 3, 1964. Deformiruyemy*ye splavy* (Malleable alloys), 120-135

TOPIC TAGS: aluminum alloy, alloy V93, forgeable alloy, alloy casting process, alloy forging process, ingot mechanical property, forging mechanical property, ingot structure, forging deformation, ingot reheating, iron content, forging temperature, casting temperature

ABSTRACT: The authors report on the technological development of optimal processes for continuous casting of ingots with diameters up to 800 mm from the recently developed alloy V93 (aluminum based, 0.8-1.2% Cu, 1.6-2.2% Mg, < 0.1% Mn, 0.15-0.4% Fe, $\leq 0.02\%$ Si, 6.5-7.5% Zn and $\leq 0.1\%$ Ti) and for the further processing of ingots into forgings weighing up to 2000 kg. The casting process involved secondary refining of melt in the mixer with molten cryolite flux (3 kg/ton) and crushed magnesite filtration between mixer and mold to remove non-metallic impurities. Ingots were homogenized for 50-55 hrs at 470C immediately after casting. The structure of all ingots was fine-grained and homogeneous. Coarse grain areas were found peripherally in larger ingots, but proper selection of mold and cooling

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ACCESSION NR: AT4037653

water pressure limited such graining to machining tolerance areas. Forging involved double or triple redrawing and upsetting. It was found that mechanical properties did not vary significantly across the given range of deformation (ingot diameter = 500 mm to pieces 140, 220 and 325 mm thick); however, the strength of the forged pieces was somewhat lower when forged from ingots with diameter = 800 mm at equal deformation levels. The best hardening temperature was $470 \pm 5^\circ\text{C}$ the optimal forging process involved 12-15 hrs. preheating to a starting forging temperature of $440-380^\circ\text{C}$ and a final 320°C . "V. P. Manuylov, Yu. M. Saratovtsev, F. P. Verbovoy, Yu. P. Snetkova, A. G. Slobtsov, Z. N. Cherny*kh, N. D. Vinokurov, F. F. Andrianov, Ye. S. Volkov, I. Ya. Zal'tsman, V. G. Kovrizhny*kh and others also took part in the work." Orig. art. has: 13 graphs and 7 tables.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 04Jun64

ENCL: 00

SUB CODE: MM

NO REF SOV: 001

OTHER: 000

Card 2/2

ACCESSION NR: AT4037654

S/2981/64/000/003/0136/0144

AUTHOR: Khol'nova, V. I.; Kovrizhny*kh, V. G.; Yelagina, Z. A.

TITLE: A study of large stampings from alloy V93

SOURCE: Alyuminiyevy*ye splavy*, no. 3, 1964. Deformiruyemy*ye splavy* (Malleable alloys), 136-144

TOPIC TAGS: aluminum alloy, alloy V93, alloy stamping, alloy heat treatment, alloy mechanical property, alloy corrosion resistance

ABSTRACT: The report concerns the effects of production technology on the properties of, large pieces (300 x 460 x 1026 mm) stamped at 350-430°C from ingots of alloy V93 (6.92-7.22% Zn, 1.93-2.06% Mg, about 1.0% Cu, 0.23-0.34% Fe, 0.12-0.15% Si, traces of Mn and Cr). The ingots were homogenized 36 hours at 445-465C and stamping followed forging at 350-420C (after preheating to 380-420C). Tests indicate tensile strength averaging 50.3-54.5 kg/mm² in three directions, yield 48.8-53.5 kg/mm², elongation 3.3-7.8% — depending on direction and area of stamping. Samples were quenched in hot water (75-85C) from 470C and aged 3 hours at 120C, then 4 hours at 165C. Tensile strength is not reduced by quenching in hot water; however, elongation deteriorates if the water temperature exceeds

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ACCESSION NR: AT4037654

85C. Corrosion tests were satisfactory, results approximating those for alloy V95. Warping was well within tolerance limits and it is concluded that parts can be heat treated after final mechanical operations by providing 2-3 mm machining allowances for special fits. "N. D. Vinokurov, F. F. Andrianov, I. Ya. Zal'tsman, Ye. S. Volkov, M. A. Vasilevskaya, N. K. Komarova and V. A. Klimova also took part in the work." Orig. art. has: 4 tables and 7 graphs.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 04Jun64

ENCL: 00

SUB CODE: MM

NO REF SOV: 000

OTHER: 000

Card 2/2

ACCESSION NR: AT4037655

S/2981/64/000/003/0145/0152

AUTHOR: Fridlyander, I. N.; Khol'nova, V. I.; Yelagina, Z. A.

TITLE: Effect of iron and silicon admixtures on the microstructure of alloy V93

SOURCE: Alyuminiyevy*ye splavy*, no. 3, 1964. Deformiruyemy* ye splavy* (Malleable alloys), 145-152

TOPIC TAGS: aluminum alloy, alloy V93, alloy microstructure, hot pressed aluminum alloy, heat treated aluminum alloy, alloy grain growth, iron admixture, silicon admixture

ABSTRACT: Ingots (diameter 70 mm) were dip-cast, then homogenized (48 hrs., 445-465C) and eventually pressed into strips (cross section 10x40 mm) after preheating for 3 hours at 400-415C, to study the effect of Fe and Si concentration on alloy microstructure. The numerous tested compositions were all based on Al (grade AV000) and contained 5.7-7.03% Zn, 1.41-1.96% Mg, 0.77-1.68% Cu, traces to 0.31% Si and 0.073-0.5% Fe. Samples were either hot pressed or heat treated (water quenched from 470 ± 5C, aged 3 hours at 120C and 4 hours at 165C). Increase of Fe to levels above 0.10% results in a finer grained and more equant structure of hot pressed samples. The heat treated material showed significantly reduced grain size and greater homogeneity with an increase in Fe.

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ACCESSION NR: AT4037655

It is concluded that ferrous components can act as recrystallization nuclei and that Fe can inhibit grain growth by forming a supersaturated solid solution in the Al. Orig. art. has: 1 table and 11 photomicrographs.

ASSOCIATION: none.

SUBMITTED: 00

DATE ACQ: 04Jun64

ENCL: 00

SUB CODE: XX

NO REF SOV: 000

OTHER: 000

Card 2/2

ACCESSION NR: AT4037656

S/2981/64/000/003/0153/0158

AUTHOR: Khol'nova, V. I.; Dzevoyed, A. A.; Kuznetsova, K. N.; Yelagina, Z. A.

TITLE: Effect of various heat treatment procedures on the mechanical properties of alloy V93

SOURCE: Alyuminiyevy*ye splavy*, no. 3, 1964. Deformiruyemy*ye splavy* (Malleable alloys), 153-158

TOPIC TAGS: aluminum alloy, aluminum zinc magnesium alloy, alloy heat treatment, alloy aging, alloy mechanical property, alloy corrosion resistance, quenching medium, aging temperature, aging period, interrupted aging

ABSTRACT: Forgings 200 and 300 mm thick, from ingots (diameter 650 or 860 mm) of alloy V93 (1.03% Cu, 1.86% Mg, 0.30% Fe, 7.3% Zn, less than 0.01% Si, Al based), served as the source of samples quenched from $470 \pm 5^\circ\text{C}$ (25 min. in a niter bath) in cold or boiling (96°C) water, as well as in cold and preheated (76°C) oil. Interrupted aging involved 3 hrs. at 120°C plus 4 hrs. at $165 \pm 5^\circ\text{C}$. Other samples were quenched in boiling water ($94-96^\circ\text{C}$) after 70 min. at $470 \pm 5^\circ\text{C}$, then aged in two stages: stage I at 100 or 120°C , stage II at temperatures ranging by 5° intervals from 160 to 180°C . Aging periods were 1, 2, 3, 4 and 5 hrs. at each temperature. Results indicate that quenching in hot water produces only

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ACCESSION NR: AT4037656

insignificant reductions in strength and this is deemed valuable in reducing stresses inside the piece. Best aging procedure from the standpoint of mechanical properties was at 100 plus 170C or 120 plus 170C, for 3 hour periods in each case. From the standpoint of corrosion resistance, aging for 3 hours at 120C plus 4 hours at 165 \pm 5C was found to be optimal. Orig. art. has: 4 graphs and 2 tables.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 04Jun64

ENCL: 00

SUB CODE: MM

NO REF SOV: 000

OTHER: 000

Card 2/2

KNOLNOVA, Ye. A.

"Calorimetric Method of Measuring the Activity of Radioactive Products."
Cand Tech Sci, All-Union Sci Res Inst of Metrology, Leningrad, 1954. (RZhFiz,
Feb 55)

SO: Sum. No. 631, 26 Aug 55 - Survey of Scientific and Technical Dissertations
Defended at USSR Higher Educational Institutions (14)

KHOL'NOVA, YE. A.

USSR/Physics - Instruments

Card 1/1 Pub. 22 - 9/48

Authors : Aglintsev, K. K., and Khol'nova, E. A.

Title : Calorimetric measurement of activity and number of gamma-quanta per act of decomposition

Periodical : Dok. AN SSSR 98/3, 357-360, Sep 21, 1954

Abstract : The construction and application of two types of calorimeters, intended for absolute measurements of beta- and gamma radiation intensities of radioactive substances, are described. The technical details and mode of operation of the gamma- and beta-calorimeters are listed. The suitability of the calorimetric method, for the determination of numbers of gamma quanta per act of decomposition, is explained. A calculation method, capable of determining the fraction of gamma-ray energy absorbed in the calorimeter, is presented. Four references: 3-USA and 1-USSR (1948-1952). Table; drawings; graph.

Institution : The D. I. Mendeleev All-Union Scientific Research Institute of Metrology

Presented by : Academician P. I. Lukirskiy, April 26, 1954

KHOL'NOVA, Ye. A.

USSR / Isotopes.

B-7

Abs Jour : Ref Zhur - Khimiya, No 8, 1957, 26057

Author : K.K. Aglintsev, F.N. Karavayev, A.A. Konstantinov, G.P. Ostromukhova, Ye.A. Khol'nova.

Inst : All-Union Scientific Research Institute of Metrology

Title : Standardization of Radioactive Preparations.

Orig Pub : Atom energiya, 1956, No 2, 55 - 62

Abstract : Methods and apparatus used at the All-Union Scientific Research Institute of Metrology for the measurement of the monitoring characteristics of radioactive preparations are described. The measurement of the γ -equivalent is done with two calibrated installations consisting of ionization chambers and electrometric appliances; one of these installations is reserved for measuring the γ -equivalents of 1 to 1,000 mg-equ. of Ra with the accuracy of from 1 to 8%. Absolute activity measurements are carried out by counters with solid angles of 4π (the measurement limit is from 5×10^{-7} to 5×10^{-11} curie) with

Card : 1/2

KHOLNOVA, YE. P.

6. Rmt

Standardization of radioactive preparations. K. K. Agalitsky, E. M. Karavayev, A. A. Kuznetsov, O. P. Ostrooukhova, and E. A. Kholnova. Atomic Energy (USSR) (English translation) 1, No. 8, Pub. in: Nuclear Energy 1, 347-350, 1961. — Description of various standardization methods used.

Rmt up

KHOL'NOVA, Ye. A.

SOV/112-59-3-5251

Translation from: Referativnyi zhurnal. Elektrotehnika, 1959, Nr 3, p 135 (USSR)

AUTHOR: Aglintsev, K. K., Balon, Z. P., Dikolegov, B. S., Karasayev, F. M., Karamyan, A. S., Konstantinov, A. A., Otkromskova, G. P., Prigayev, P. G., Ruzicova, S. A., Sumbayev, O. I., Khol'nova, Ye. A., Shonopelova, S. A., Yudin, M. F., and Yartitsyn, I. A.

TITLE: Metrology of Penetrating Radiations

(Metrologiya pronizayushchikh izlucheniy)

PERIODICAL: V ob.: Atomn. energiya v mirnykh tselyakh. Gosenergoizdat.

1951. 77 145-181

ABSTRACT: Projects are described of the Vsesoyuzny nauchno-issledovatel'skiy institut metrologii (All-Union Scientific-Research Metrology Institute) lineal B. I. Mandel'ev on standardisation of measures in the ionising-radiation field, and on the construction of standard and reference units for reproducing the fundamental units in the whole range of energy and intensities of radiation of all types. The following units are described: (1) a standard reproducing

Card 1/3

ABSTRACT: Projects are described of the Vsesoyuzny nauchno-issledovatel'skiy institut metrologii (All-Union Scientific-Research Metrology Institute) lineal B. I. Mandel'ev on standardisation of measures in the ionising-radiation field, and on the construction of standard and reference units for reproducing the fundamental units in the whole range of energy and intensities of radiation of all types. The following units are described: (1) a standard reproducing

the remigen in the range of 40-300 Kev; (2) a reference outfit for measuring the remigen of electromagnetic radiation doses having the quantum energy of 300-1,500 Kev; (3) an outfit for measuring in remigen the electromagnetic radiation doses with quantum energy of 3-20 Kev with an error of 1%; (4) two standard outfits for measuring radium gamma-equivalents; (5) differential lead-hall gamma-calorimeters for measuring the activity of various preparations on the basis of their gamma radiation; (6) an isothermal calorimeter operating on the principle of liquid-nitrogen evaporation for measuring the activity of beta preparations; (7) a differential alpha-calorimeter for measuring the activity of radium preparations. An activity-measurement method by counting the number of particles emitted by a preparation is being developed in two directions: counting of particles in a definite solid angle and the same in the total solid angle by means of "gr"-counters. The beta-particle counter with a definite angle permits measuring preparations with an activity of 10⁻⁶ - 10⁻⁵ curie with an error of 4-6%. Two alternate designs of "gr"-

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SOV/112-59-3-5251

Metrology of Penetrating Radiations

counters" are described. One of them permits measuring beta preparations with an activity of 10⁻¹⁰ - 5 x 10⁻⁹ curie with an error of 2-4%, and the second, 5 x 10⁻¹¹ - 5 x 10⁻¹⁰ curie with an error of 1-3%. The outfits have been built for measuring electron streams from 10⁶ down to a few tens of electrons per sec. A gamma-spectrometer "Electron" with an improved focusing has been built for investigation of gamma spectra in the energy range of 500-1,500 Kev. To conduct investigations in the range of 120-1,300 Kev, a 2-meter long crystal-diffraction gamma-spectrometer of the Dimond type has been built. Also, a magnetic spectrometer analyzing photoelectrons has been built for the range of 200-700 Kev. Measuring the half-life from a few hours to a few years is made by two methods: the method of successive measurements of gamma-equivalent preparations and the differential-chamber method. The results of half-life measurements for a number of isotopes are tabulated.

N.G.Z.

Card 3/3

KHOL'NOVA, Ye.A.

Isothermic calorimeter for measuring the activity of beta
radiators. Trudy VNIIM no.30:18-24 '57. (MIRA 12:1)
(Beta rays--Measurement) (Calorimeters)

AGLINTSEV, K.K.; KHOL'NOVA, Ye.A.

Differential calorimeter for measuring the activity of preparations according to gamma radiation. Trudy VNIIM no.30:25-36 '57. (MIRA 12:1)

(Calorimeters)

(Gamma rays--Measurement)

R. OLSEN, Ye.A., KARAVAYEV, F.M., AGHAYEV, R.L., LON, I.I., K. SARTANOV, A.A.,
OSTONUKHOVA, G.P., Leningrad

"Standardizing X-ray and nuclear radiation" (Section X)

report submitted for Measurement and Automation, Scientific Society for (Hungarian)
Intl Measurements Conference - Budapest, Hungary, 24-30 Nov 58

AUTHOR: Khol'nova, Ye. A. SOV/48-22-7-18/26

TITLE: Determination of γ -Quanta Number per Decay Process of La^{140}
(Opredeleniye chisel γ -kvantov na raspad La^{140})

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958,
Vol. 22, Nr 7, pp. 848-849 (USSR)

ABSTRACT: This method of the experimental determination of the number of γ -quanta per decay process is based upon the calorimetric measurement of the heat liberated in the absorption of β - and γ -rays (which are emitted by the investigated isotopes). This method, which is taken from reference 1, is described. Two formulae are given; (3) and (4). Their application permits to find directly the number of γ -quanta per decay process for a line the relative intensity of which is assumed as being equal to unity. The number of γ -quanta per decay process for other lines can be found from relation (1). In the investigation of La^{140} the energies and relative intensities of the γ -lines found in the "ritron" of Prikhodtseva and Khol'nov (Ref 2) were used. The average energy of the β -particles were taken from the spectrum of La^{140} , which was

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SOV/48-22-7-18/26

Determination of γ -Quanta Number per Decay Process of La^{140}

obtained with the "ketron" of the Leningrad State University. The average energy was 445 keV. The energy emitted by the La^{140} preparation as β - and γ -radiation was measured with the calorimeters of the VNIIM (Ref 4). By using the spectroscopic characteristics the number of γ -quanta per decay process was determined for the most intensive γ -line with 1597 keV, the relative intensity of which, being assumed as equal to unity in reference 2, was 0,95. After the number of γ -quanta for the other lines was determined as described above, the energies were multiplied with the respective numbers of γ -quanta per decay process. The results of all γ -lines were added. Thus the energy emitted in one decay process in the form of γ -radiation was found. It came out as 2200 keV. As the relative intensities of the β -components and their limiting energies were known, the average total energy of the β -particles per decay process was determined. It was 1310 keV. Hence, the total energy per decay process equals 3510 keV, that is to say, by 300 keV less than in the existing decay schemes. Hence it is concluded that the relative intensities taken from reference 5 by the author are inaccurate. This error, however, has no effect on the accuracy of the determination

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Determination of γ -Quanta Number per Decay Process of La^{140}

of the number of γ -quanta per decay process, as a decomposition of the β -spectrum into components was not necessary. L. P. Timofeyeva assisted in a number of measurements and computations. There are 1 table and 5 references, 4 of which are Soviet.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im. D. I. Mendeleyeva
(All-Union Scientific Research Institute of Metrology imeni D. I. Mendeleyev)

Card 3/3

AGLINTSEV, K.K.; KARAVAYEV, F.M.; KARAMYAN, A.S.; KONSTANTINOV, A.A.;
OSTROMUKHOVA, G.P.; KHOL'NOVA, Ye.A.; YUDIN, M.F.; YARITSYNA, I.A.

Achievements in the metrology of ionising radiation and prospects
for its development. Trudy.VNIIM no.33:135-158 '58.

(MIRA 11:11)

1. Rukovoditel' otдела ioniziruyushchikh izlucheniye Vsesoyuznogo
nauchno-issledovatel'skogo instituta metrologii imeni D.I.Mendeleyeva
(for Aglintsev).

(Radiation--Standards)

SOV/115-59-2-29/38

21(8)

AUTHOR: Aglintsev, K.K., Ostromukhova, G.P., Khol'nova, Ye.A.

TITLE: Determining the Process of Air Ionization for Co⁶⁰
Gamma Radiation (Opredeleniye raboty ionizatsii v
vozdukhie dlya gamma-izlucheniya Co⁶⁰)

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 2, p 52 (USSR)

ABSTRACT: The author believes that there is a lack of information so far on the importance of ionization in the field of hard gamma radiation. Tests were made to determine the value of ionization in the air for Co⁶⁰ gamma radiation. This was found by measuring the same preparation Co⁶⁰ m with the help of a normal ionization chamber to ascertain the number of ion elements and of gamma calorimeters, which give the value of the absolute activity of this preparation. Tests with four different Co⁶⁰ preparations showed that the mean value of ionization equaled 33.7 ± 1.5 ev. There are 5 references, 3 of which are Soviet and 2 English.

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S/115/60/000/012/012/018
B021/B058

AUTHORS: Aglintsev, K. K., Ostromukhova, G. P., and Khol'nova, Ye.A.

TITLE: Measurement of the Gamma Constant of Radium

PERIODICAL: Izmeritel'naya tekhnika, 1960, No. 12, pp. 40-42

TEXT: Methods and results of the determination of the gamma constant of radium which were obtained at the VNIIM (Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im. D. I. Mendeleyeva (All-Union Scientific Research Institute of Metrology imeni D. I. Mendeleyev)), are given in this paper. The values of the γ -constant were determined by measuring the values of the dose rate and the activity of one and the same preparation,

i.e. $\Gamma(Ra) = \frac{P \cdot 3600}{A f}$, P being the dose rate in 1-cm distance from the preparation, in r/sec; A the activity of the preparation in millicurie, f the coefficient of correction. Radon preparations were used instead of radium, in order to exclude errors due to self-absorption of γ -radiation in the source. The linear attenuation factor of the γ -radiation of radium

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Measurement of the Gamma Constant of Radium

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in air was determined experimentally. The measurement results are represented graphically. The probable errors of quantities involved in the calculation of the dose rate are listed. The activity of the radon preparations was determined by the calorimetric method. The greater part of the studies for determining the γ -constant of radium is based on measuring the dose rate by means of thimble chambers. Finally it is stated that all measurements made by means of thimble chambers up to the publication of the theories mentioned, require checking. The dependence of the data on the conditions of diaphragming is described as being the second error source in the measurement of the γ -radiation by means of thimble chambers. ✓
Moreover, no method for calculating the correction for scattered radiation in air is elaborated for thimble chambers. Measurement results of the γ -constants of radium during filtering by means of 0.5-mm platinum, obtained by various authors, are mentioned next. According to the authors' data, this quantity will be 8.04 r/h.mg.cm in the case of an open-air chamber, if the number of decays per mg radium is assumed as being $3.68 \cdot 10^7$. Other authors determined the γ -constant at 8.26, 8.16 and 8.4 r/h.mg.cm. There are 1 figure, 1 table, and 16 references: 4 Soviet, 8 US, 2 British, and 1 Canadian.

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S/589/61/000/055/001/006

D051/D113

21.6000

AUTHORS: Timofeyeva, L.P.; Khol'nova, Ya.A.

TITLE: Calorimetric device for measuring radium preparations

SOURCE: USSR. Komitet standartov, mer i izmeritel'nykh priborov.
Trudy institutov Komiteta, no. 55 (115), Moscow, 1961.
Issledovaniya v oblasti izmereniya ioniziruyushchikh izlucheniya,
5-34

TEXT: A detailed description of the design, theory, calibration, and operation of a calorimetric device developed at VNIIM and intended for measuring the absolute activity of α -preparations (particularly radium preparations) is given. The device can also be used as a β -calorimeter, in which case the α -glass envelopes are suitably replaced. The measuring device consists of a β -calorimeter and two independent static-type α -calorimeters, intended for measuring differently sized radium ampoules. The device consists of the following basic parts: (1) two copper

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Calorimetric device for measuring...

cylinders with the calorimeters; (2) a water thermostat; (3) an electric device for measuring calorimeter temperature; (4) a potentiometric system for calorimeter calibration; (5) a system for measuring the sensitivity of the galvanometer; (6) a device for regulating the liquid level in the thermostat. The calorimeter design is very similar to that of a radio balance described by W.B. Mann (Ref. 2: J. Research. NBS, v. 52, 1954, p 177; v. 53, 1954, p 277). The main difference is that, in these calorimeters, the thermal capacity of the preparation depends on the exact calibration of the calorimeter involving the use of a definite power source. The experiments established that the sensitivity of the calorimeters permits measuring radium preparations in the 0.1 mc - 1 C range and measuring β -preparations in the 5-10 mc - 3 C range. An analysis of the method of measuring the absolute activity of radium preparations and of the sources of possible errors showed that the error does not exceed $\pm 0.8 \pm 1.0\%$. In this connection, the advantages of absolute calorimetric measurements for determining the activity of non-

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Calorimetric device for measuring...

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standard radium preparations are discussed. On the basis of published data on the energies and intensities of different types of radiation of equilibrium radium preparations, the authors further calculated the heat effect from 1 mc of radium and also the correction of RaD, RaE, and polonium build-up for radium preparations of different ages. They finally examined the possibility of using the α -calorimeter for relative measurements of radium preparations. An analysis of the errors of these measurements revealed that: (1) the error involved in the comparison does not exceed $\pm 0.3\%$; (2) the Ra content in the preparations can be determined with an accuracy of about $\pm 0.5\%$. The individual experiments carried out with α -calorimeters were as follows: (1) absolute and relative measurements of a standard radium preparation made in the GDR; (2) measurement of the absolute activity of a set of highly active standard radium preparations; (3) comparative study of four radium gages. There are 6 figures, 11 tables, and 8 references: 5 Soviet and 3 non-Soviet-bloc. The three English-language references are: W.B. Mann,

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